A Study of Uranium Concentrations in the Treasure Valley Aquifer System

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The Treasure Valley Aquifer System (TVAS) in southwestern Idaho contains well-documented uranium concentrations over the U.S. Environmental Protection Agency (EPA) drinking water standard of 30 µg/L (EPA, 2001). Most of the region's water use is sourced from the aquifer system, so current and robust knowledge is necessary of the spatial and temporal extent of uranium in the groundwater (Bartolino and Vincent, 2017).

A large water quality dataset has been compiled that includes well sample measurements of uranium, arsenic, alkalinity, nitrate, and other water quality constituents. The compiled dataset contains information with a wide range of locations spread throughout Treasure Valley and at a variety of depths. Preliminary results indicate the presence of several spatial characteristics of uranium in the TVAS; uranium is present at high concentrations and with high variability, geographic hotspots of high uranium concentrations appear to be present, and high concentrations seem to be associated with shallow depths within the aquifer. High uranium concentrations also appear to be associated with oxidizing environments in the TVAS, decreasing to below the MCL in reducing environments.

The knowledge gained in this study will provide the Idaho Department of Water Resources and other natural resource managers in the Treasure Valley with groundwater management recommendations that will inform decisions with implications in public health, land development, and domestic and municipal water quality.